2006 Shipboard Technology Evaluation Program

General Guidance for the Applicant

1.0 Information for the Applicant

1.1 Program overview and objectives

The United States Coast Guard Shipboard Technology Evaluation Program (STEP) for onboard ballast water treatment systems is designed to provide incentive to ship owners and operators to install experimental or prototype ballast water treatment (BWT) systems with demonstrated potential for effective removal or destruction of unwanted organisms in ballast water. This document summarizes the policy, implementation, and general guidance for STEP, found in the Coast Guard Navigation and Vessel Inspection Circular no. 01-04, "Shipboard Technology Evaluation Program (STEP): Experimental Ballast Water Treatment Systems", and the STEP 2006 application process. Prospective applicants may also review the source NVIC documents, available online at http://www.uscg.mil/hq/g-m/mso/step.htm.

Acceptance into STEP results in a designation of equivalency to future ballast water discharge standard regulations, for up to the life of the vessel or the system, while the prototype system operates satisfactorily. The U. S. Coast Guard (Coast Guard) and the successful Applicant enter into an agreement whereby valuable experimental data accrues to the Government and the public at large and the Applicant's vessel is accepted into the STEP for a specific period of time, during which operation of the experimental system is considered equivalent to meeting applicable regulatory requirements for ballast water management. The terms of the equivalency require that the application meet a detailed set of specifications to enable a thorough evaluation prior to acceptance.

The general expectations of the Coast Guard are for well-conceived experimental designs and proper testing protocols. The main points of your program must address the testing and monitoring provisions outlined in NVIC 01-04, including:

- Treatment efficacy and testing
  - BWT system performance (or evidence of such performance based on smaller scale experiments) meeting the Coast Guard's treatment criteria as specified in the NVIC. Specifically, 98% removal of organisms larger than 50 microns, and testing the efficacy of the treatment system for inactivation, removal or killing of eukaryotic organisms smaller than 50 microns and bacteria.
  - Experiments specifically addressing the mortality and/or viability of the wide variety of organisms present in ballast water.
  - Testing with appropriate challenge waters (i.e. biologically rich harbor and/or coastal waters).
- STEP Equivalency period, and experimental and monitoring phases
  - Equivalency for the lesser of the life of the vessel or the service life of the BWT system
  - Year 1 system installation and testing, including primary biological experiment(s)
  - Year 5 repeat primary experiment(s)

  - Years 1 through 5—Monitoring system operations, including treatment performance parameters identified through the primary biological experiments in Year 1, and preparation and submission of quarterly and annual reports

- Operation of the BWT system as designed throughout the equivalency period, and maintenance of the system to ensure reliable operation. Applicants should note that there is an important operational difference between BWT system testing for removal or inactivation of biological organisms and ballasting operations once accepted into STEP. System testing may include treatment of the water in a subset of the ship's tanks, while routine operations during the equivalency period must include treatment of all ballast water in all tanks as the ship's method of ballast water management.

- Environmental compliance requirements
  - Requirement that Coast Guard ensure compliance through the National Environmental Policy Act (NEPA) process.
  - Due diligence by Applicant in providing requested biological and ecological information, and obtaining the necessary permits from regulatory agencies (Federal, state, local).
  - Provision that systems found to have an adverse impact on the environment or presenting a risk to the vessel or human health will be withdrawn from the program.

- Safe design and operation
  - Foreign vessel owners must provide documentation that indicates that the proposed installation is to the satisfaction of their classification society or Administration.
  - U.S. vessel owners must submit drawings and other information on the interface between the proposed BWT system and the vessel's vital systems to their classification society and the USCG Marine Safety Center, showing that the interface does not degrade existing systems or create dangerous conditions.

- Significant BWT System Modifications
  - Requirement to report any significant system or operational modifications.
  - Re-evaluation in such cases by the Review Panel and the possible requirement for review of a revised STEP application.
  - Re-evaluation by the Coast Guard, possibly requiring a new decision by the Coast Guard on STEP acceptance status, including reinterpretation or rework of supporting experimental programs, need for revisions of the test and monitoring compliance plans, and review of any required environmental permits.

1.2 Who may apply

STEP applicants must be ship owners or operators, that is, the entity that receives the regulatory equivalence offered by the Coast Guard with respect to ballast water management. The Applicant must:

- Propose a particular ship or ships for the BWT system installation

- Have BWT system installed on the ship or have detailed design drawings for the installation
- Have a BWT system that is ready for shipboard installation
- Have test information (bench, pilot, or full scale, the latter including shoreside or shipboard trials) providing clear evidence that the BWT system can treat ballast water to the NVIC specification
- Have sufficient technical and operational data to complete the data tables in the STEP 2006 Application Form. Prospective applicants should review the Form carefully to ensure that their test program is sufficiently mature for consideration for acceptance into STEP by the Coast Guard.

1.3 Role of the Review Panel

The Volpe National Transportation Systems Center (Volpe Center) is an agency of the U.S. Department of Transportation. The Volpe Center acts as the Coast Guard's technical agent in this matter and manages the STEP Review Panel. The Review Panel consists of marine biologists and marine and civil engineers, with multiple persons in each relevant subject matter area. For each STEP application, the Volpe Center STEP project manager will designate a Review Team (four to six people) from the Review Panel. The Review Panel's work includes:

- Technical evaluation of STEP applications;
- Observation and evaluation of the experimental test program, including shipboard visits, in Years 1 and 5 of the equivalency period;
- Review of the Applicants' reports on the monitoring of the treatment system's operation and performance throughout the equivalency period.

Neither the Volpe Center nor the Review Panel has any enforcement authority. The Panel's findings and recommendations will, in part, be the basis of the Coast Guard's decisions on acceptance into the STEP and of compliance with STEP's terms during the period of equivalency.

1.4 STEP Program contact information

- Dr. Richard Everett, STEP project manager (202-267-2243)
- Website: http://www.uscg.mil/hq/g-m/mso/mso4/bwm/step.htm

2.0 STEP Application Submittal and Review and Approval Process

2.1 Application Format and Quality

STEP 2006 is a significant change in the way Coast Guard requests information from program applicants. The new STEP Application Form emphasizes presentation of technical information in pre-formatted figures and tables with brief textual descriptions, with primary references organized in appendices.

To be accepted by the Coast Guard, a STEP application must follow the format and information requests listed in Table 1 of the STEP 2006 Application Form. The Applicant must provide all requested data, but may however add or omit information provided there is satisfactory explanation of the change. The Coast Guard and the Review Panel expect applications of high quality, specifically:

- Completion of all tables in application form
- Succinct, clear language
- Inclusion of all technical data requested in the Application Form, avoiding reference to appendices or cited materials for such data
- Proper referencing of appended materials
- Primary references (required for review) included as appendices
- Submission of the application in electronic format
- Submission of five hard copies of the application

2.2 Events and milestones:

A flow chart and time line of the STEP process is illustrated in Figure 1. The major milestones in the STEP program are the following:

- Initial completeness review by the Review Team to ensure that all required elements of the application are in place
- Revision of the application, if necessary, and resubmission without prejudice (note: resubmitted applications will be considered as new, except in cases where only minor omissions require work and the Applicant amends and returns the application promptly).
- Detailed technical review of the application and supporting documentation by the Review Team
- Review Team request for minor clarifications and additional information through a Technical Questionnaire to the Applicant
- Applicant decision to continue or opt out of the program
- Revision of application by Applicant
- Review of revised application by Review Panel and submission of Technical Report to the Coast Guard
- Coast Guard decision, re: acceptance into STEP

The Coast Guard conducts the NEPA environmental compliance review and consultations with resource protection agencies, using BWT system data and information about the ship's operation, provided by the Applicant, and environmental data and analysis, provided by the Review Team. The Technical Questionnaire and other correspondence with the Applicant may include requests for additional information in support of the Coast Guard's review.

The Applicant is not responsible for the development of ecological data or environmental analysis, but must provide sufficient information about the BWT system operation, in particular residual chemicals in discharged ballast water and other waste streams, and the ship's operation, in particular volumes of water loaded and discharged and geographic locations for those operations.

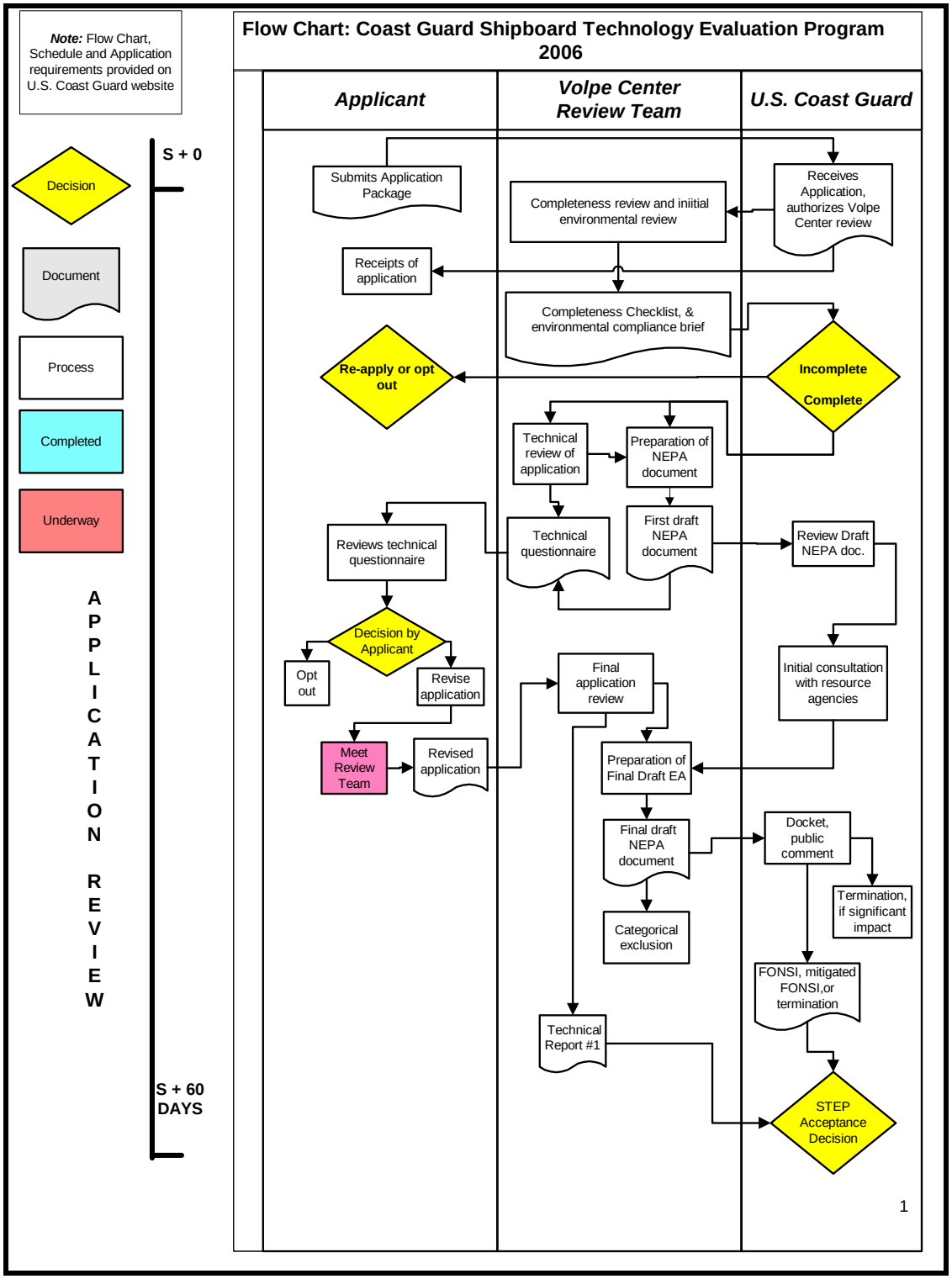
2.3 Communications between Applicant and the Government

It is important that clearly defined lines of communication, particularly during the review of STEP applications, be established between the Applicant and Government, since review and approval of the application is an intensive, short term process involving the Review Panel, the Coast Guard, and, sometimes, other Federal agencies. The important lines of communication are between:

- Applicant and Coast Guard: Applicant's STEP project manager and the Coast Guard STEP program manager (Dr. Everett)

- Applicant and Volpe Center:
    - For project management, scheduling matters, set-up of meetings and teleconferences: Applicant's STEP project manager and Volpe Center's designated Review Team leader (Contact information to be provided upon receipt of application)
    - For technical matters: Applicant's and Review Team's respective subject matter experts, via telecons and e-mail, as determined by the Applicant's STEP project manager and Volpe Center's designated Review Team leader

FIGURE 1:STEP 2006 FLOWCHART



3.0 Post-Approval Process and Activities

3.1 Experimental Period – Years 1 - 5

The Review Panel's work continues following the decision of the Coast Guard to accept the vessel into STEP. The Panel's evaluation of compliance with the study plan and system operation will continue throughout the experimental phase (Years 1 - 5) of the equivalency period, through review of reports submitted by the Applicant. The Panel will function similarly in tracking the system's engineering and treatment performance during the monitoring phase (Years 6 and onward). Onboard inspections may be carried out by the Coast Guard as part of routine and non-routine vessel inspections throughout the equivalency period.

The Review Panel will request one or more site visits:

- Scoping visit to the ship following installation and engineering testing of the treatment system and before the start of the experimental program.
- One visit to the ship during the primary experimental test program.
- One or more follow up visits in subsequent years for monitoring of operational and environmental performance of the system, including the Year 5 repetition of the primary experiment(s).

3.2 Monitoring Period – Years 5 – End

During the monitoring phase (post Year 5), the Applicant is required to provide annual reports only, for review by the Review Team and the Coast Guard. The Coast Guard does not anticipate the need for detailed inquiry or ship visits by the Review Team during this period, unless the Applicant makes significant modifications to the design or operation of the BWT system, or if system performance degrades significantly or fails in terms of engineering, treatment efficacy, or environmental compliance. The BWT system may be subject to inspection by Coast Guard officers conducting routine marine safety and environmental compliance visits.

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